

ABSTRACT OF THE DISCLOSURE

A magnetic memory device capable of achieving high reliability and superior operation characteristics of tunneling magneto-resistive (TMR) elements is provided. This magnetic memory device includes a semiconductor substrate, a transistor which is formed above the semiconductor substrate, and a TMR element which is formed on or above an interlayer dielectric film that covers the transistor of the substrate. The device also includes a first wiring line which is buried in the interlayer dielectric film and connected to a source/drain diffusion layer of the transistor, a second wiring line which is buried under the TMR element while overlying the first wiring line within the interlayer dielectric film and which is used to apply a current-created magnetic field to the TMR element during writing, and a third wiring line connected to an upper surface of the TMR element and provided to cross the second wiring line. The third wiring line is for applying a current magnetic field to the TMR element during writing and also for causing a cell current to flow during reading. The second wiring line is formed by patterning techniques so that its both edges are placed outside of a pattern of the TMR element.